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SAFETY SHOES PROTECTIVE SHOES WORKING SHOES FOR PROFESSIONAL USE EQUIPPED TO  
ALLOW IDENTIFICATION AND TO MEMORIZE OTHER DATA

DESCRIPTION

Safety, protective and working shoes for professional use becomes dirty through  
5 use and moreover its performance tends to decrease due to treatments performed  
such as washing, sterilization, wear and the like.

In the case of shoes for professional use a certain number must be collected, to  
perform treatment such as washing, sterilization or other treatment cumulatively and  
simultaneously, and therefore they must be returned to the individual owners and/or  
10 users.

The invention above all relates to the incorporation of a transponder in the shoe,  
to allow identification that is certain, rapid and automatic by means of specific  
readers designed to receive data from the transponder.

The invention also allows – by means of the transponder – each shoe to be  
15 given a certain number of data or in any case these data to be associated by means  
of a univocal code contained in the transponder. This makes it possible to identify  
who they belong to, the time they have been in use, the number and type of  
treatments performed and as a function of these the state of preservation and/or  
remaining performance to avoid exceeding the limits beyond which the performance  
20 that the shoe is required to provide may be impaired.

The invention makes it possible to implement checks and identifications, even  
with substantially automated operations, facilitating both management of treatments  
and safety of checks.

The invention makes it possible to identify the class and/or peculiar  
25 characteristics of each item and to verify its consistency in the case of access to  
specific work areas (highly dangerous areas, clean rooms, etc.) and, by means of  
specific apparatus, to allow access or not, or in any case to detect and/or report the  
ascertained deficiencies.

To obtain the above, each shoe or pair of shoes is equipped with a transponder  
30 which is incorporated such as to make loss and/or replacement reasonably difficult  
and/or easy to identify. The transponder is capable of monitoring the data relative to  
the shoe, who it belongs to and if necessary also the number and the type of  
treatments performed and any other information of interest concerning the item in

which the transponder is incorporated.

In the specific case of safety shoes, protective shoes and working shoes for professional use, this comprises a transponder which may be incorporated in the sole or in other parts of the shoe, during manufacture, or – by providing specific housings  
5 – in a subsequent phase.

It may also be possible to re-use the same personalized transponder, to be used subsequently by the user by inserting it in shoes used subsequently to replace worn shoes.

10 In an advantageous embodiment, the transponder may contain a univocal code, by means of which the information mentioned above may be associated by means of a data processing system, designed to dialog with the transponders.

Another object of the invention is a process that is particularly suitable to produce safety, protective and working shoes for professional use, with the injection and/or molding system of the bottom that today represents the most widely used  
15 system in the production of shoes.

In the process – which entails producing the bottom by injection into a mould in which a last is positioned on which the upper and relative insole are fitted – a transponder is positioned in the mould prior to injection and/or introduction of the plastic material to form the sole; therefore said transponder is incorporated in the  
20 actual sole. In practice, said transponder may be made to adhere to the exposed surface of the insole, mounted on the last, before this is positioned in the mould.

It being stated that the position of the transponder may differ from the one indicated in the example hereunder, the invention shall now be better understood by following the description and accompanying drawing, which shows a non-limiting  
25 practical embodiment of the invention, relating to a safety, protective and working shoe for professional use. In the drawing:

Fig. 1 summarily shows, in a cross-section, a shoe equipped with transponder according to the invention;

Fig. 2 shows in a cross-section a last with upper and insole combined with  
30 a mould for injection and/or molding of the sole or bottom of the shoe.

According to what is illustrated in the drawing, 1 indicates the upper of the shoe and 3 indicates the sole or bottom of the shoe; 5 indicates the insole that completes the shoe.

According to the invention, a transponder 7 is combined with the shoe, and particularly with the sole or bottom of this shoe; this transponder in practice is positioned between the sole 3 and the insole 5, being more or less incorporated in the sole produced with the injection and/or molding system.

5       The transponder may be combined with the shoe in any suitable way, also by combining the insole 5 with the pre-constructed sole 3, producing in the sole 3 a seat designed to house the transponder 7. Said seat may be produced in any way, at the side or on the top or in other positions of the sole.

When – as in the majority of cases – production of a shoe of the aforesaid type  
10      is performed by directly molding the sole onto the upper 1 and the insole 5, mounted  
on a last, this molding operation may also be used to incorporate the transponder.

Fig. 2 shows a last F – on which the structure formed of the upper 1 and the insole 5 has been fitted –according to a known technique said last being combined  
15      with a mould S shown summarily, which is provided with a cavity C that is delimited  
by the assembly of the last with the parts combined on it, so that it closes the cavity  
C. It is thus possible to inject thermoplastic resin to form the sole, which is modeled  
according to the shape of the cavity C completed by the structure of the last F and  
the parts applied to it.

To incorporate the transponder 7, this may be simply applied to the exposed  
20      surface of the insole 5 of the assembly 1, 5 mounted on the last F. Therefore the  
transponder 7 is located in the cavity C which will be filled with injected thermoplastic  
resin. The transponder 7 will in this way be incorporated in the resin and thus in the  
sole produced. Therefore, combination of the transponder with the shoe takes place  
25      with an extremely simple operation, equivalent to traditional operations to produce  
safety, protective and working shoes for professional use, like the one defined above  
with the sole molded on the last equipped with upper and insole; the only additional  
operation is the operation to position the transponder against the insole before  
positioning the last against the mould.

It is understood that the drawing only shows an example, provided purely as a  
30      practical illustration of the invention, and that said invention may vary in forms and  
arrangements without however departing from the scope of the concept forming the  
invention.

The invention also provides that the transponder may be combined with the

shoe by positioning it in the upper or in accessory parts of it, in a specific housing.

In some cases safety, protective or working shoes may be implemented with the transponder positioned in such a way that it can be recovered and re-used.